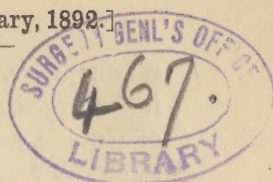


MAYS (T. J.)

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OBSERVATION AND EXPERIMENT IN PHTHISIS.

A Reply to Professor Tyndall.

By THOMAS J. MAYS, M.D.,
PHILADELPHIA.

THE September number of *The Fortnightly Review* contains an article by Professor John Tyndall "On the Origin, Propagation, and Prevention of Phthisis," which, being written in that gentleman's usual lucid and impressive style, must carry conviction of its apparent truthfulness wherever it is read. To one, however, who is fully conversant with this controversy, which has been agitating the medical profession for the last ten years, it is clear that this article deals only with a small part of this great question, and that its premises are as erroneous as its conclusions are mischievous and harmful. The singular fallacy of the reasoning which has been expended here is the assumption that when a disease has been shown to be communicable to the lower animals through inoculation that it must also be contagious, or infectious in the human family. Inoculation merely teaches that a disease may be transmitted, but whether the disease originates in this manner in practical life is quite another question, as will be seen from the evidence which will be offered hereafter.

The burden of the paper is devoted to showing the value of "Dr. Cornet's great investigation" in its bearing on the origin and prevention of phthisis. The question whether the bacilli are ubiquitous or not is immaterial, so long as we admit (which is not disputed by Cornet) that they are most abundant in the environment of consumptives; and we shall therefore pass on and examine the second research of Dr. Cornet, reviewed by Dr. Tyndall, viz., that on "The Mortality of the Nursing Orders" in the Catholic convents and monasteries of Prussia, and in which he demonstrates that phthisis causes 62.88 per cent. of all the deaths among the nursing members of these institutions, but without any reason infers that they acquire the disease by nursing

consumptives. Ever since this communication was made public it has served as ammunition to bolster up the contagion theory of phthisis, and what does it really show? Does it show anything new? No, for it is common professional knowledge that this disease prevails very largely among those who lead indoor and inactive lives, precisely such a life as is followed by these nurses. Indeed Dr. Baer's statistics show (*Ueber das vorkommen von Phthisis in den Gefangenen*, 1884) that the death-rate from phthisis among German prisoners is even greater—ranging from 64 to 90.9 per cent. Does Dr. Cornet's work prove the contagious nature of phthisis? No, for Dr. Baer's statistics also point out that prisoners who suffer solitary confinement, and who have, of course, no personal contact with any outside sources of the disease, are more prone to phthisis by 20 per cent. than those who are allowed to associate with each other. Another pressing question needs an answer before Dr. Cornet's inquiry can carry any weight whatever. Not all the inmates of these convents and monasteries are engaged in nursing, but some devote their lives to teaching and to other work. Now why did he not make a comparative examination of the death-rate of those who are engaged in nursing and of those who teach, and so demonstrate whether those exposed (nurses) are more liable to this disease than those not so exposed (teachers, etc.)?

Moreover, I have shown (*Philadelphia Medical and Surgical Reporter*, September 27, 1890) that the relative death-rate of American firemen from consumption (*i. e.*, when their death-rate is compared with that of the ordinary adult population from this disease, which is about 27.29 per cent.) is 53.09 per cent., only about 10 per cent. less than that which occurs among the Catholic nurses, and which are believed by Dr. Cornet to have contracted the disease from those whom they were nursing. Does this show that contagion plays any considerable part in the production of phthisis? Hardly, for here we have a class of men who lead an outdoor life, and who do not come in contact with tubercle bacilli, or with the expectoration of consumptives, except by chance; and who, irrespective of their occupation, are not surrounded by any influence prejudicial to their health; and yet, in spite of all these conditions, even after, so far as this is possible,

all the personal and family factors which are known to induce the disease are eliminated by a rigid medical examination, consumption causes nearly 26 per cent. more of their deaths than it does among the ordinary adult population. Why does this high mortality exist among firemen? It is because anything which has the power to sap, and exhaust the vigor and vitality of the constitution, also has the capacity to produce phthisis, regardless of the absence or presence of exposure to the bacillus tuberculosis. There is, perhaps, no class of men who are more open to enervating and depressing physical influences, or who suffer greater deprivations of rest and sleep than our firemen. The sudden transition from a warm room to active duty on a cold winter's night; the daring, the excessive and almost superhuman exertion demanded in battling with the flames; the extreme oscillations of temperature to which their bodies are subjected—bathed in perspiration at one moment and drenched and chilled by an icy stream of water the next; the necessity during emergencies of wearing and even sleeping in wet clothing from one fire to another, are burdens which no human constitution can long successfully withstand, and are unquestionably some of the most prominent causes which undermine the health of these self-sacrificing men.

There is an abundance of other testimony which points against the contagious nature of phthisis in spite of the fact that there are many who profess to have seen well-defined evidence of contagion. I never yet saw a case of this kind reported which on thorough examination did not turn out to be a case of misplaced confidence, so far as positiveness is concerned. Probability exists sometimes, but this does not constitute positive proof. This is not surprising, for it is not a question which is susceptible of decision by an appeal to specific individual instances, either for or against contagion; but is, as Dr. Oldendorff has recently expressed it before the *Society for Internal Medicine*, in Berlin, a question which must be decided by statistics; and these, as we shall see, give no uncertain tones in response.

Notwithstanding the assertion of Dr. Tyndall that "no investigation has proved that the mortality among physicians by phthisis does not far exceed the average" (p. 304), I am prepared to show

that their mortality is far smaller than the average, and that among those who are especially exposed to the bacillary poison their death-rate from this disease is almost *nil*. The statistics of the Brompton Hospital for consumption, in London, show that during a period of thirty-six years not a single clearly authenticated case of consumption arose within its walls among its 29 physicians and assistant physicians, its 150 clinical assistants, and its 101 nurses, of which there existed a health record. The statistics of Friedrichshain Hospital, in Berlin, lately gathered by Dr. Furlinger, show that during a period of sixteen years out of 83 physicians there were 2, out of 798 nurses there were 4, who became consumptive. This certainly points to an exceedingly small death-rate, and when we reflect that life insurance companies accept physicians as preferred risks, and view the transaction through a hard, cold-cash basis, it is needless to spin any fanciful theory concerning the necessary mortality of these men from consumption in consequence of their daily exposure to this disease.

These statistics in regard to the non-contagiousness of phthisis are also confirmed by Dr. Detweiler, who declares that during the fourteen years of the active existence of his hospital for consumption, at Falkenstein, in Germany, not a single case of contagion occurred among the attendants, although a large number of consumptives were treated during that time, and some of the nurses had been in constant contact with very ill patients for seven years.

The same is also shown by the influence of the consumption hospital of Görbersdorf, in Germany, on the death-rate from consumption among the inhabitants of that town. Dr. Brehmer, who had been in charge of that institution for twenty years, says that since 1854 more than ten thousand consumptives resided in his hospital, who daily walked the streets of that town and commingled with its inhabitants. The latter were, therefore, continuously breathing an atmosphere more or less laden with tubercle bacilli, emanating from the dried expectorations of these consumptive visitors; yet, in spite of these favorable conditions for contagion, the mortality from consumption among the Görbersdorf native population is 50 per cent. less since than it was before the establishment of his hospital.

Dr. Haupt, of Söden, recently gave some very interesting

figures which bear strongly on this question. Soden is a beautiful watering-resort for consumptive and other invalids at the foot of the Taunus Mountains, in Germany. He says that among the inhabitants of Soden there are 101 individuals who let lodgings to consumptive visitors during the summer months. These patients are nursed and cared for chiefly by the inmates of the families—the work of making the patients' beds, cleaning their rooms, beating the carpets, removing the expectorations, etc., being performed by female servants. During the winter months the rooms are reoccupied by the members of the landlords' families. Here then is a most fertile field for consumption to communicate itself from the sick to the well, if this disease possesses all the virulent contagious properties which are ascribed to it by our enthusiastic but ill-starred friends; yet Dr. Haupt states that from 1855 to 1888—a period of thirty-three years—10 of the 238 members of such families died from consumption. In six of these cases, however, consumption was hereditary, and the cause of death in the remaining four was traceable to colds and other external causes. Of the 415 servant girls who were employed, 5 died from consumption; but in no instance, so far as is known, was the disease traceable to contagion.

Dr. Langerhans, who practised medicine for nine years in Madeira, an island which is visited every winter season by about 400 consumptives, states that these invalids are lodged, boarded, and in great part nursed by English colonists, varying from 210 to 250 in number, who live in about 100 houses. The rooms which are occupied by consumptives in the winter are reoccupied during the summer, thus insuring the closest intermingling of the well with the sick; but the health-records, which have been accurately kept since 1836, show that only four of the English colonists died from consumption, and that one of these suffered from the disease before he came on the island. These figures are especially interesting in view of the sentimental fear that the healthfulness of mountain and of other resorts becomes impaired by the infectiousness of the exhalations and expectorations coming from consumptives who go there for relief.

Similar negative testimony is obtained from the statistics of the non-contagiousness of consumption between husband and

wife. Dr. Schnyder, of Switzerland, gives a record of 844 cases of consumption occurring among married people. In 445 of these the husband only, and in 367 the wife only, was consumptive; while in 32 both the husband and wife were affected. He does not believe, however, that one of the 32 cases originated through contagion, for he has knowledge that 4 of these came to him fresh from the matrimonial altar afflicted with the beginning of the disease, and he thinks that young people occasionally marry whose health is in a similar condition. The late Dr. Flint gives a record of 670 cases of consumption affecting husbands and wives, and among these there were only 5 in which a suspicion of contagion arose; but it is certain, he says, that these cases can also be accounted for as coincidents in a disease so prevalent as consumption. M. Leudet shows, too, that out of 112 widows and widowers whose consorts died of consumption, only 7 (4 women and 3 men) became consumptives.

Now, if all these data mean anything, they assert positively that consumption or phthisis does not arise by being transmitted from person to person through contagion. The pursuit of experimental investigation which Dr. Tyndall affirms will root out "this terrible scourge of tuberculosis" has absolutely done nothing to unravel the origin or propagation of phthisis, as we meet it in every walk of human life. All that it has done is to show that the disease may be transplanted by inoculation after it has been called into existence by other causes. The great difficulty has always been a neglect to distinguish between the origin and the transplantation of consumption. These two phenomena are actually treated as if they were one and the same thing, yet there is about as much difference between the original genesis of a new form of life, whether normal or abnormal, and the artificial transplantation of the same, as there is between sunlight and moonlight.

This is well shown in skin-grafting. Particles of skin are planted on denuded bodily surfaces and become thoroughly incorporated and form new skin, yet this artificial procedure gives us no knowledge of the origin and mode of genesis of the skin that is transplanted. Nor does vaccination give us the remotest idea of the source of the cow-pox virus. A vegetable graft is

also capable of communicating the peculiar properties of the fruit, color of leaves, or of the tree or plant from which it is taken, to the *whole* tree or plant on which it is grafted. Dr. Darwin (*Animals and Plants, etc.*, vol. i. p. 474), after relating a number of cases in which grafting or budding infused the peculiar characteristics of plants and trees into the stocks which received the grafts, concludes that the process may be regarded as the inoculation of a disease. Now the experimentalist who holds that because grafts possess the power of transmitting their properties to the plant-stock, and that therefore all the diversified wealth of vegetable form and beauty is the product of inoculation by grafting, is about as wise as he who assumes that because pulmonary consumption may be produced by artificial inoculation, nature pursues a similar course in producing this disease.

Let us imagine for a moment that the data which I have presented here are mythical, that all the hostility to the contagionists emanates from what Dr. Tyndall passionately defines as "a number of loud-tongued sentimentalists, who, in view of the researches they oppose, and the fatal effects of their opposition, might be fairly described as a crew of well-meaning homicides," and that at the present time it was agreed to enforce the contagion theory, with all its cruel possibilities, to the bitter end, what possible benefit could any one expect from such a procedure, in the light of the history we have on this point? We should precisely repeat the experiment which was tested in Naples—from 1782 to about 1850—with the most disastrous results. At that time the Neapolitans believed too that phthisis was contagious, and they enacted and enforced the most rigorous laws that have ever been introduced for the suppression of any disease. For the neglect of reporting a case, a physician was fined one hundred and eighty dollars, with banishment for ten years. In every case the ceilings, walls, floors, doors, and windows of the rooms in which consumptives died were torn out and burned, and new ones were substituted. The bedding and furniture shared the same fate, and such dwellings were not inhabitable for one year. In consequence of these stringent laws, the family with phthisis in its midst was shunned and driven to want, and the patient was separated from the well and was regarded as a public pest. Houses in which

consumptives died came into disrepute, and many of their owners were turned into beggars. The sick were neglected and left to die inhumanly, away from their families and friends. The intolerance of this heroic treatment becomes more evident when we learn that it had no influence whatever in diminishing the death-rate from phthisis in Naples and in other localities where it was administered.

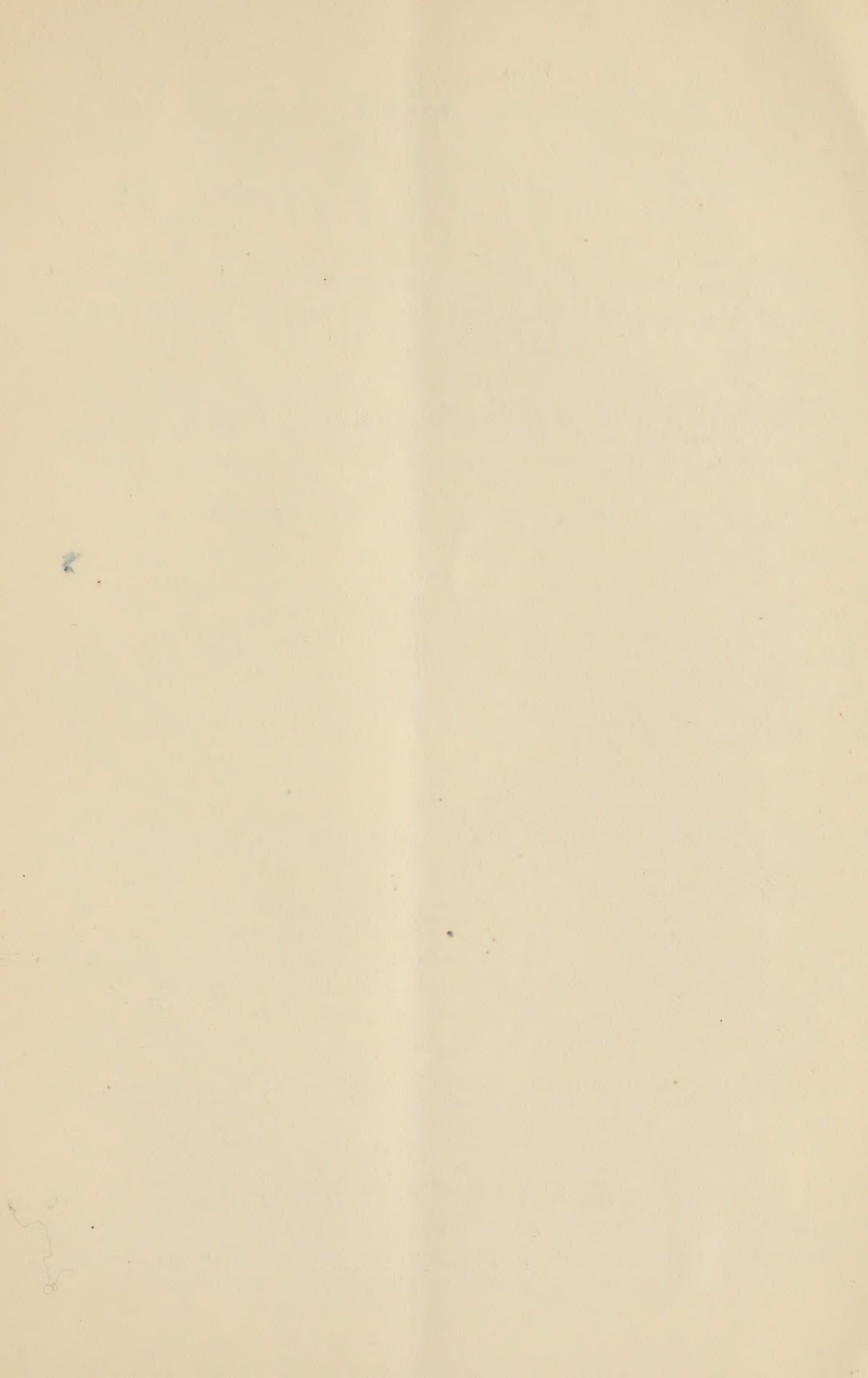
These facts will also have to be met by those who claim that phthisis is a contagious disease. It is useless to plead that a knowledge of the bacillus gives us more power to prevent this disease now than it did then without such knowledge. The authorities of Naples were as firm in their conviction that this disease was contagious as the most enthusiastic bacillus-theorist is, and they carried out their ideas of prevention with the utmost exactness. Indeed, the requirements of the modern contagionists for stamping out phthisis seem more like the vaporings of a child's brain than the outcome of sober reflection, when compared with the strenuous efforts which the unfortunate and deluded Neapolitans put forth to crush out this disease. It was not enough for them that consumptives should cease to spit in handkerchiefs, on floors, ground and pavements, and use spittoons instead, and that they should prevent their expectoration from becoming dry, and diffuse the bacilli through the air; but these people were at once separated from the well, and in all probability neither they, their expectoration, nor their bacilli, ever came in contact with the outside world again. Yet, in face of all the enormous amount of injury which was inflicted by these measures, there was not the least stay in the death-rate from this disease, for statistics show that this was as high, and probably higher, than in cities where segregation never received any consideration.

In view of these developments, does it not seem a strange satire on history to find men who are again anxious to repeat the follies and foibles of a century ago?

I think I have shown that the work of Dr. Cornet, in common with all the experimentation which has been devoted to showing the contagious nature of phthisis, is not only a wretched failure, but perpetrates a terrible iniquity on those who are afflicted with this disease, and wastes the time and energies of the people by

misguiding them in regard to the true origin, propagation, and prevention of phthisis ; and I am safe in predicting that he who persists in hugging this contagion delusion will live to reap "from the hopes which around him he sows, a harvest of barren regrets."

(For references on this subject, see Dr. J. Uffelmann, *Berliner Klin. Wochenschrift*, 1883, s. 369 ; Dr. Valentin, *Voyage Médical en Italie*, etc., 1822 ; Dr. Sim, *Medical Times and Gazette*, 1860, vol. i. p. 363 ; Professor de Renzi, *Storia della medicina Italia*, p. 512 ; Phthisis in Italy, *British and Foreign Medico-Chirurgical Review*, vol. xlv. p. 112.)



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